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FOR DISCUSSION ONLY - 4:00 P.M. TELECONFERENCE ON 11/8/04

APPLICATION # 10/038,556

Client/Matter No: 24571-112591 Equitrac ID: 8543

FOR DISCUSSION ONLY FOR 4 PM TELECONFERENCE ON 11/08/04

In re: Application of SHEMBEL, et al.

Application No. 10/038,556 Examiner: Dove, Tracy M.

For: SOLID POLYMER ELECTROLYTE LITHIUM BATTERY

DOCKET 7053-1

Applicants would first like to acknowledge their appreciation for the Examiner's time and consideration of the "homogeneous" issue raised on pages 6 and 10 of the Final Office Action dated October 5, 2004.

The point to be made by Applicants is that the limitation recited in claim 1 "wherein said salt and said aprotic solvent are integrated with said modified polymeric material as a homogeneous material" clearly recites a structural arrangement, the electrolyte components being integrated and being in the form of one homogeneous material, not reciting a process limitation (e.g. formed homogeneously). Accordingly, the claimed electrolyte is a single homogeneous phase material comprising the polymer, salt and solvent, not a two-phase electrolyte as asserted on page 10 of the Office Action. As such, claim 1 is a composition claim reciting a homogeneous material composition, not a product-by process claim as asserted on page 6 of the Office Action, and should be examined as such.

Claim 1 as pending is copied below for easy reference:

1. A polymer electrolyte comprising:
a modified halogen containing polymer having an enhanced halogen level relative to a halogen content of an unmodified halogen containing polymer formed from polymerization of its monomer;
a salt of an alkali metal; and
an aprotic solvent, wherein said salt and said aprotic solvent are integrated with said modified polymeric material as a homogeneous material.

A 'product-by-process' claim is one in which the product is defined at least in part in terms of the method or process by which it is made. *See Parker v. Flook*, 437 U.S. 584, 588 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972); 2 Donald S. Chisum, *Patents* § 8.05 (1992). This is in accordance with MPEP 2173.05(p) entitled "Claim Directed to Product-By-Process or Product and Process" which defines a product-by-process claim as a claim "which *is a product claim that defines the claimed product in terms of the process by which it is made*, is proper. In re Luck, 476 F.2d 650, 177 USPQ 523 (CCPA 1973); In re Pilkington, 411 F.2d 1345, 162 USPQ 145 (CCPA 1969); In re Steppan, 394 F.2d 1013, 156 USPQ 143 (CCPA 1967). Claim 1 recites that the electrolyte is a "homogeneous material", not that the electrolyte is formed by a homogeneous process, or any other process for that matter. Accordingly, claim 1 is a pure product claim not defined in terms of any process by which it is made.

Perhaps some of the confusion can be traced to Applicants' pages 11 and 12 of their Reply filed on July 19, 2004 which describes the novel homogeneous process disclosed in Applicants' application that can be used to form the claimed homogeneous polymeric comprising material:

The homogeneous (single phase) polymeric electrolyte structure results from Applicants' novel process for forming the electrolyte where the electrolyte is dissolved in solution together with the Li salt and two solvents (forming a solution including all electrolyte components), such as disclosed on page 21, lines 11-15 (copied below):

The C-PVC formed can then combined with $LiClO_4$ and propylene carbonate which are together dissolved in tetrahydrofuran (THF) to form a substantially homogenous solution. This solution is then casted upon a glass sheet or placed directly on the electrode and dried 24 hours at room temperature and then for 48 hours under a vacuum at 45°C. After drying the thin C-PVC SPE film, the film is ready for use in lithium batteries.

Since the polymer, the salt, and the solvent are homogeneously mixed in solution, following evaporation of the volatile solvent (THF), the resulting electrolyte material is homogeneous. The homogeneous single phase nature of Applicants' claimed electrolyte which comprises the polymer, the salt and some aprotic solvent being intimately mixed is also evidenced by the high electrical conductivity values obtained by Applicants, such as the lithium

ion conductivity of up to .108 S/cm^2 disclosed in the application (Example 6, page 26, line 2). For a 100 μm thick electrolyte layer, the resulting Li ion conductivity would be 1.08×10^{-3} S/cm. The lithium ionic conductivity obtained is much higher than the Li ion conductivity provided by conventional polymer electrolytes (such as Chang and Chia cited by the Examiner) which are non-homogeneous two-phase materials which have the pores of the polymer stuffed with an electrolyte/salt solution.